Amendments to the Claims:

Claim 1 (original):

A faceted polyhedron molecule or a polymeric structure comprising polygon moieties and linking moieties, wherein said polygon moieties comprise edges and vertices, wherein a first polygon moiety is attached to a second polygon moiety by at least one of said linking moieties, and wherein said at least one linking moiety is attached to a vertex of said first polygon moiety and a vertex of said second polygon moiety.

Claim 2 (original):

The faceted polyhedron molecule or polymeric structure of claim 1, wherein said at least one linking moiety is a coordinating ligand or a bridging ligand.

Claim 3 (original):

The faceted polyhedron molecule or polymeric structure of claim 2, wherein said first polygon moiety and said second polygon moiety each comprise a metal, and wherein said linking moiety is a coordinating ligand.

Claim 4 (original):

The faceted polyhedron molecule or polymeric structure of claim 3, wherein said coordinating ligand is attached to said vertex of said first polygon moiety and said vertex of said second polygon moiety through covalent interactions.

Claim 5 (original):

The faceted polyhedron molecule or polymeric structure of claim 3, wherein said coordinating ligand is a multifunctional carboxylate ligand.

Claim 6 (original):

The faceted polyhedron molecule or polymeric structure of claim 5, wherein said multifunctional carboxylate ligand is a bifunctional carboxylate ligand.

Claim 7 (original):

The faceted polyhedron molecule or polymeric structure of claim 6, wherein said bifunctional carboxylate ligand is benzene-1,3-dicarboxylate.

Claim 8 (original):

The polymeric structure of claim 1, wherein said linking moiety is a trifunctional carboxylate ligand.

Claim 9 (original):

The polymeric structure of claim 8, wherein said trifunctional carboxylate ligand is 1,3,5-benzene tricarboxylate.

Claim 10 (original):

The faceted polyhedron molecule or polymeric structure of claim 2, wherein at least one of said first and second polygon moieties comprises a non-metal moiety and said linking moiety is a bridging ligand.

Claim 11 (original):

The faceted polyhedron molecule or polymeric structure of claim 10, wherein said bridging ligand is a multifunctional molecular moiety capable of sustaining multiple supramolecular interaction.

Claim 12 (original):

The faceted polyhedron molecule or polymeric structure of claim 1, wherein said linking moiety subtends an angle of about 90° between the planes occupied by said first and second polygon moieties.

Claim 13 (original):

The polymeric structure of claim 1, wherein said linking moiety subtends an angle greater than about 90° between the planes occupied by said first and second polygon moieties.

Claim 14 (original):

The faceted polyhedron molecule or polymeric structure of claim 1, wherein said linking moiety subtends an angle of about 120° between the planes occupied by said first and second polygon moieties.

Claim 15 (original):

The faceted polyhedron molecule or polymeric structure of claim 1, wherein said linking moiety subtends an angle of about 144° between the planes occupied by said first and second polygon moieties.

Claim 16 (original):

The faceted polyhedron molecule or polymeric structure of claim 1, wherein at least one of said first and second polygon moieties comprises a non-metal.

Claim 17 (original):

The faceted polyhedron molecule or polymeric structure of claim 1, wherein said first or second polygon moiety can sustain 3-fold rotational symmetry.

Claim 18 (original):

The faceted polyhedron molecule or polymeric structure of claim 1, wherein said first or second polygon moiety can sustain 4-fold rotational symmetry.

Claim 19 (original):

The faceted polyhedron molecule or polymeric structure of claim 1, wherein at least one of said first and second polygon moieties comprises a transition metal.

Claim 20 (original):

The faceted polyhedron molecule or polymeric structure of claim 19, wherein said transition metal is in a 2+ transition state.

Claim 21 (original):

The faceted polyhedron molecule or polymeric structure of claim 19, wherein said first and said second polygon moieties each comprise transition metals.

Claim 22 (original):

The faceted polyhedron molecule or polymeric structure of claim 19, wherein said first and second polygon moieties each comprise transition metals, and wherein said transition metals are not in the same transition state.

Claim 23 (original):

The faceted polyhedron molecule or polymeric structure of claim 18, wherein said transition metal is not in a 2+ transition state, and wherein said faceted polyhedron molecule further comprises a counterion that may or may not be coordinated to said transition metal.

Claim 24 (original):

The faceted polyhedron molecule or polymeric structure of claim 1, further comprising a solvent molecule.

Claim 25 (original):

The faceted polyhedron molecule or polymeric structure of claim 1, further comprising a solvent molecule selected from the group consisting of methanol, ethanol, I-propanol, dimethylformamide, and acetonitrile.

Claim 26 (original):

The faceted polyhedron molecule or polymeric structure of claim 1, wherein said first polygon moiety comprises a non-metal and said second polygon moiety comprises a non-metal.

Claim 27 (original):

The faceted polyhedron molecule or polymeric structure of claim 26, wherein said first polygon moiety comprises a non-metal and second polygon moiety comprises a non-metal, wherein the vertices of said first and second polygon moieties are connected by a bridging ligand.

Claim 28 (original):

A compound comprising a faceted polyhedron molecule or polymeric structure, wherein said faceted polyhedron molecule or polymeric structure comprises polygon moieties and linking moieties, wherein said polygon moieties comprise edges and vertices, wherein a first polygon moiety is attached to a second polygon moiety by at least one of said linking moieties, and wherein said at least one linking moiety is attached to a vertex of said first polygon moiety and a vertex of said second polygon moiety.

Claims 29-53 (withdrawn)

Claim 54 (new):

The faceted polyhedron molecule or polymeric structure of claim 1, wherein said faceted polymeric molecule is $[(L)(S)Cu_2(bdc)_2]_{12}$, wherein L is pyridine, S is methanol, and bdc is benzene-1,3-dicarboxylate.

Claim 55 (new):

The facet polyhdefron molecule or polymeric structure of claim 1, wherein said polymeric molecule is $[(S)Cu_2(bdc)_2]_{12}$, wherein S is methanol and bdc is benzene-1,3-dicarboxylate.